Claims:

1. A hydrophilic, step-growth curable oligomer composition comprising

a) a first component oligomer comprising a plurality of polymerized monomer units comprising pendant reactive nucleophilic or electrophilic functional groups, and pendent, hydrophilic polyalkylene oxide groups;

b) a second polyfunctional component co-reactive with said first component oligomer comprising a second oligomer comprising a plurality of polymerized monomer units comprising pendant functional groups co-reactive with said pendant reactive nucleophilic or electrophilic functional groups of said first component oligomer.

2. The oligomer composition of claim 1 wherein the composition is melt-processable at temperatures of 100°C or less.

3. The oligomer composition of claim 1 wherein at least one of a) and b) has a functionality of greater than 2.

4. The composition of claim 1, wherein said oligomers a) and b) have an average degree of polymerization of less than 300.

5. The composition of claim 1, wherein each of said oligomers a) and b) have a degree of polymerization of less than 300.

6. The composition of claim 1 wherein said composition has a residual content of less than 2 weight %.

7. The composition of claim 1, wherein said pendent polyalkylene oxide groups of said first component oligomer is of the formula:-$(CH(R^1)-CH_2-O)_m-R^2$ wherein R^1 is a H or a C_1 to C_4 alkyl group, R^2 is H, a C_1 to C_4 alkyl group, aryl, or combinations thereof, and m is from 2 to 100.

8. The composition of claim 1, wherein said pendent poly(alkylene oxide) group is a poly(ethylene oxide) (co)polymer.

9. The composition of claim 1, wherein said pendent poly(alkylene oxide) group is a poly(ethylene oxide-co-propylene oxide) copolymer.

10. The composition of claim 1 which comprises an amount of said second component sufficient to provide more than two crosslinks per first component oligomer chain.

11. The composition of claim 1 which comprises

(a) from 0.1 to 99.9 parts by weight of said first component oliogomer, and

(b) from 99.9 to 0.1 parts by weight of said second component oligomer, wherein the composition, when crosslinked, can absorb at least 50 wt.% water.

12. The composition of claim 1 which comprises:

(a) from 20 to 99.9 parts by weight of said first component oligomer, and

(b) from 99.9 to 0.1 parts by weight of said second component oligomer.

13. The composition of claim 1 having a viscosity of 500 to 10,000 cPs at temperatures less than 100°C.

14. The composition of claim 1 wherein said first component oligomer comprises

(a) from 20 to 99.9 parts by weight of polymerized monomer units derived from of an ethylenically-unsaturated monomer having a poly(alkylene oxide) group;

(b) from 0.1 to 35 parts by weight of polymerized monomer units derived from of an ethylenically-unsaturated monomer having a pendent reactive nucleophilic or electrophilic functional group;

(c) from 0 to 50 parts by weight of polymerized monomer units derived from polar monomer;

(d) from 0 to 20 parts by weight of polymerized monomer units derived from hydrophobic monomers;

(e) from 0 to 10 parts by weight of at least one other monomer.

15. The oligomer composition of claim 14 wherein said polar monomer, when present, is selected from the group consisting of substituted (meth)acrylamides, N-vinyl pyrrolidone, N-vinyl caprolactam, acrylonitrile, tetrahydrofurfuryl acrylate, acrylamides, and mixtures thereof.

16. The composition of claim 1 wherein said second component oligomer comprises

(a) from 20 to 99 parts by weight of polymerized monomer units derived from an ethylenically-unsaturated monomer having a pendent poly(alkylene oxide) group;

(b) from 0.1 to 35 parts by weight of polymerized monomer units derived from an ethylenically-unsaturated monomer having a pendent co-reactive nucleophilic or electrophilic functional group;

(c) from 0 to 35 parts by weight of polymerized monomer units derived from a polar monomer;

(d) from 0 to 20 parts by weight of polymerized monomer units derived from a hydrophobic monomer;

(e) from 0 to 10 parts by weight of at least one other monomer.

17. The composition of claim 1 further comprising a step-growth catalyst.

18. The composition of claim 1 wherein at least one of said reactive and co-reactive functional groups are protected functional groups.

19. The composition of claim 1, wherein said nucleophilic functional group of said ethylenically-unsaturated monomer possessing a nucleophilic functional group is selected from hydroxy, amino, isocyanato and azlactone functional groups.

20. A crosslinked composition comprising the composition of claim 1, having an average molecular weight between crosslinks of $\geq$ 1000.

21. A process for making a substrate bearing a coating of a crosslinked polymer composition on at least one surface thereof, comprising the steps of:

(a) coating onto said substrate the oligomer composition of claim 1; and

(b) thermally crosslinking said first oligomer component and second component by forming covalent bonds between said reactive groups of said first oligomer and co-reactive groups of said second component.

22. The process of claim 21 wherein said oligomer composition further comprises a step-growth catalyst.

23. The process of claim 21 wherein said oligomer composition has been partially converted to a coatable viscosity of from 750 to 7,500 cPs at 22°C prior to step a.

24. The process of claim 21 wherein said oligomer composition comprises

(a) per 100 parts by weight of said first component oligomer, an amount of said second component oligomer sufficient to provide more than two crosslinks per first component oligomer chain;

(b) less than 2 parts by weight residuals content; and

(c) from 0.0001 to about 3.0 parts by weight of a step-growth catalyst.

25. The process of claim 21 wherein said first component oligomer comprises:

(a) from 20 to 99.9 parts by weight of polymerized monomer units derived from of an ethylenically-unsaturated monomer having a poly(alkylene oxide) group;

(b) from 0.1 to 35 parts by weight of polymerized monomer units derived from of an ethylenically-unsaturated monomer having a pendent reactive nucleophilic or electrophilic functional group;

(c) from 0 to 50 parts by weight of polymerized monomer units derived from polar monomer;

(d) from 0 to 20 parts by weight of polymerized monomer units derived from hydrophobic monomers;

(e) from 0 to 10 parts by weight of at least one other monomer.

26. The process of claim 25 wherein said polar monomer, when present, is selected from the group consisting of substituted (meth)acrylamides, N-vinyl pyrrolidone, N-vinyl caprolactam, acrylonitrile, tetrahydrofurfuryl acrylate, acrylamides, and mixtures thereof.

27. The process of claim 21 wherein said second component oligomer comprises

(a) from 20 to 99 parts by weight of polymerized monomer units derived from an ethylenically-unsaturated monomer having a pendent poly(alkylene oxide) group;

(b) from 0.1 to 35 parts by weight of polymerized monomer units derived from an ethylenically-unsaturated monomer having a pendent co-reactive nucleophilic or electrophilic functional group;

(c) from 0 to 35 parts by weight of polymerized monomer units derived from a polar monomer;

(d) from 0 to 20 parts by weight of polymerized monomer units derived from a hydrophobic monomer;

(e) from 0 to 10 parts by weight of at least one other monomer.

28. The process of claim 27 wherein said hydrophic monomers, when present, comprise acrylic esters of non-tertiary alkyl alcohols having 5 to 12 carbon atoms.

29. The process of claim 21 wherein at least one of said reactive and co-reactive functional groups are protected functional groups.

30. The process of claim 21 wherein the molecular weight (M_n) of said first oligomer is less than the entanglement molecular weight.

31. The process of claim 30 wherein the molecular weight of said first component oligomer is controlled with a chain transfer agent.

32. The process of claim 31 wherein said chain transfer agent is alpha methylstyrene.

33. The process of claim 21 wherein said pendant reactive functional group is a hydroxyl functional group and said pendant co-reactive functional group is selected from the group of an anhydride functional groups and an azlactone functional groups.

34. The process of claim 25 wherein said pendant reactive functional group is an azlactone group.

35. The process of claim 25 wherein said pendant reactive functional group is a hydroxyl group.

36. A process for making a substrate bearing a coating of a crosslinked polymer composition on at least one surface thereof, comprising the steps of:

(1) coating onto said curable oligomer composition of claim 1; and

(2) crosslinking said first oligomer component and second component by forming covalent bonds between said reactive groups of said first component oligomer and co-reactive groups of said second component.

37. The process of claim 36 wherein said step (2) of crosslinking is in the presence of a catalyst.

38. The process of claim 37 wherein said catalyst is a step-growth catalyst.

39. The process of claim 37 wherein said catalyst is an acid catalyst.

40. An absorbent dressing comprising a crosslinked hydrophilic gel absorbent layer of claim 1.

41. The absorbent dressing of claim 40 comprising:

a permeable facing layer,

a backing layer bonded to said facing layer at the periphery, and

a hydrophilic gel absorbent layer disposed between the backing and facing layer.

42. The absorbent dressing of claim 40 having a layer of pressure sensitive adhesive on at least a portion of the front surface of the facing layer.

43. The absorbent dressing of claim 40 wherein the gel layer further comprises a pharmacologically active agent.

44. The absorbent dressing of claim 40 wherein the gel layer further comprises a hydrocolloid.

45. The absorbent dressing of claim 40 wherein the gel layer further comprises a patterned surface.